

**REMARKS**

Claims 1-3 and 6-25 are pending in the application. Claims 12-25 have been withdrawn from consideration. Claims 4 and 5 have been canceled and claims 1 and 6 have been amended. Favorable reconsideration of the application, as amended, is respectfully requested.

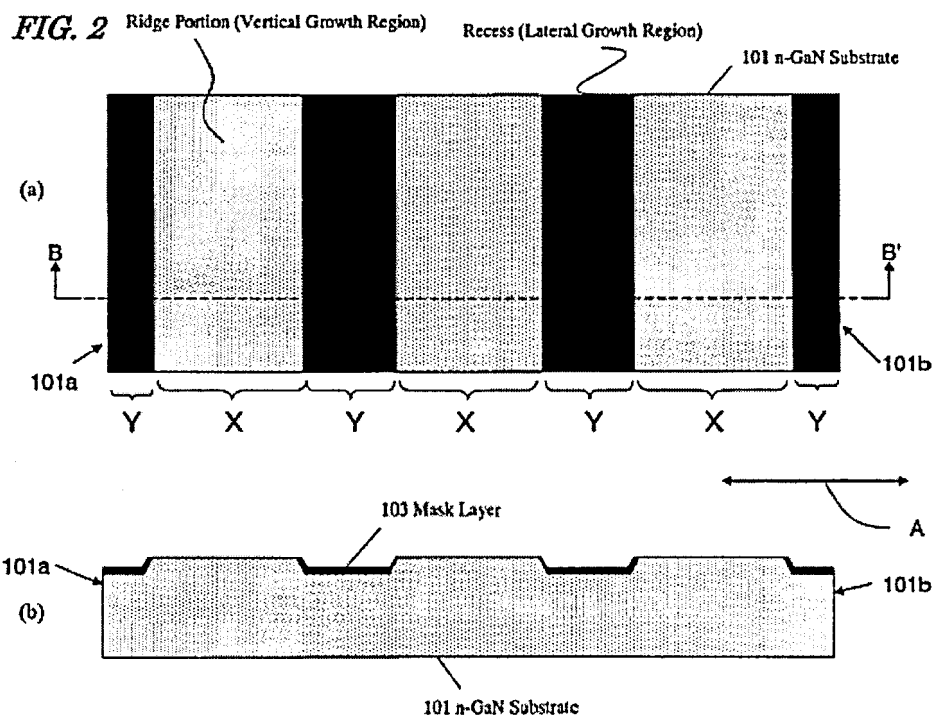
**DRAWINGS**

The Examiner objects to Figs. 12 and 13 because they are not designated "Prior Art". Applicants have submitted herewith replacement sheets for FIGS. 12 and 13, which include the legend "Conventional Art". Accordingly, the Applicant respectfully requests withdrawal of the objections to the drawings.

***Claim Rejections – 35 U.S.C. § 102***

Claims 1, 4 and 6-7 stand rejected under 35 U.S.C. 102(b) as being anticipated by Kong et al. (U.S. Patent No. 6,582,986). Withdrawal of this rejection is respectfully requested for at least the following reasons.

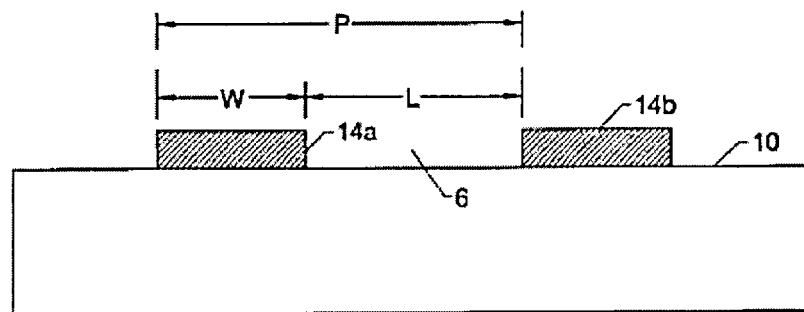
Claim 1 has been amended to include the subject matter of original claims 4 and 5. Specifically, amended claim 1 recites that the vertical growth region on the principal surface of the substrate structure is defined by a striped ridge portion that is present on the principal surface of the substrate structure. This feature is illustrated in FIG. 2 of the specification, reproduced below.



[Present Application]

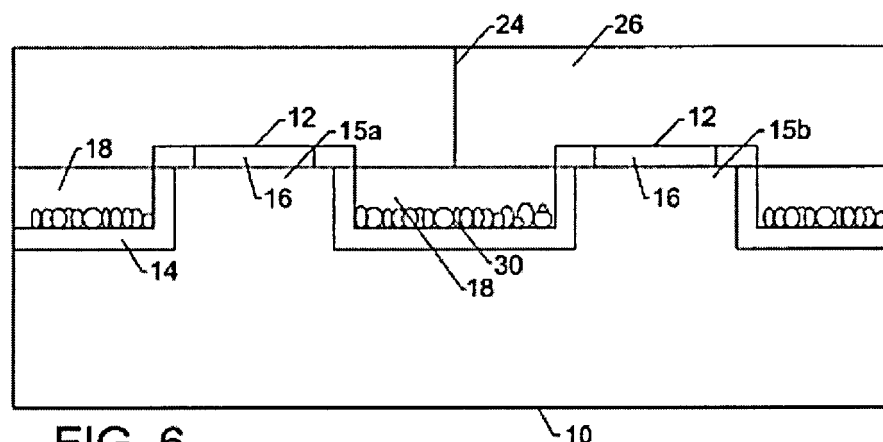
Claim 1 of the present application recites the feature that “the sum  $\Sigma X$  of the respective sizes of the vertical growth regions as measured in a first direction (A), which is parallel to the principal surface of the substrate structure, and the sum  $\Sigma Y$  of the respective sizes of the lateral growth regions as measured in the first direction satisfy the inequality  $\Sigma X/\Sigma Y > 1.0$ ”.

Figure 1 of Kong et al. (shown below) illustrates that the sum of the respective sizes of the vertical growth regions (L) is larger than that of the lateral growth regions (W). Kong et al. appears to employ such a structure in order to increase the lateral growth rates relative to the vertical growth rates. However, in FIG. 1 of Kong et al., the principal surface of the substrate structure is flat and does not have a striped ridge portion.

**FIG. 1.**

[Kong et al.]

Kong et al. discloses a structure having striped ridge portions in FIG. 6 (shown below). In the case of this structure, Kong et al. teaches that the sum of the respective sizes of the vertical growth regions (defined by striped ridge portions) (L) is smaller than that of the lateral growth regions (W). The substrate structure in FIG. 6 of Kong et al. has recessed areas or trenches 18, and the lateral growth layer 26 grows laterally over the trenches 18. Hence, even if nucleation and growth of polycrystalline GaN 30 occurs on the mask 14, it occurs within the trenches 18, and thus does not interfere with the lateral growth of the layer 26.

**FIG. 6.**

[Kong et al.]

Kong et al. teaches that in the case of the structure shown in FIG. 6, the lateral growth rate of layer 26 does not need to be increased relative to the vertical growth rate, and thus the total size of the vertical growth regions does not need to be larger than that of the lateral growth region. In other words, Kong et al. teaches that it is preferable to satisfy the condition  $L < W$  in the case of a substrate structure with ridge portion (FIG. 6), while it is preferable to satisfy the condition  $L > W$  in the case of a substrate structure without ridge portion (FIG. 1). In light of the above, Kong et al. actually teaches away from the claimed semiconductor device. Accordingly, Applicants respectfully submit that the rejection of claims 1, 4 and 6-7 under 35 U.S.C. 102(b) as being anticipated by Kong et al. should be withdrawn.

#### ***Claim Rejections – 35 U.S.C. § 103***

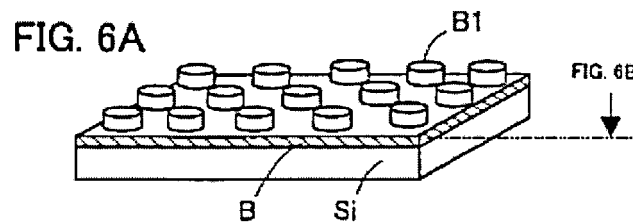
Claim 2 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Kong et al. (U.S. Patent No. 6,582,986) in view of Matsumura et al. (U.S. Publication No. 2006/0078024). Claim 3 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Kong et al. (U.S. Patent No. 6,582,986) in view of Matsumura et al. (U.S. Publication No. 2006/0078024) and Shakuda (U.S. Publication No. 2004/0079960).

Claim 5 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Kong et al. (U.S. Patent No. 6,582,986) in view of Nagai et al. (U.S. Patent No. 7,052,979).

Claims 8 and 9 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Kong et al. (U.S. Patent No. 6,582,986) in view of Matsumura et al. (U.S. Publication No. 2006/0078024) and further in view of Shakuda (U.S. Publication No. 2004/0079960) and Kiyoku et al. (U.S. Patent No. 6,940,103). Claim 10 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Kong et al. (U.S. Patent No. 6,582,986) in view of Matsumura et al. (U.S. Publication No. 2006/0078024) and Shakuda (U.S. Publication No. 2004/0079960) and further in view of Hatano et al. (U.S. Patent No. 5,042,043). Claim 11 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Kong et al. (U.S. Patent No. 6,582,986) in view of Matsumura et al. (U.S. Publication No. 2006/0078024), Shakuda (U.S. Publication No. 2004/0079960) and Hatano et al. (U.S. Patent No.

5,042,043) and further in view of Nagai et al. (U.S. Patent No. 7,052,979). Withdrawal of the rejections under 35 U.S.C. §103(a) is respectfully requested for at least the following reasons.

Claim 1, from which all of the other claims depend, has been amended to include the subject matter of original claims 4 and 5. With respect to the rejection of original claim 5, the Examiner contends that Nagai et al. discloses a semiconductor device comprising growing a nitride based semiconductor layer on a nitride bases semiconductor having striped ridge/projection parts wherein vertical growth is conducted. However, in Nagel et al., as shown in FIG. 6A (shown below), the vertical growth region on the principal surface of the substrate structure is not defined by a striped ridge portion, but projection parts (B1).



[Nagai et al.]

As discussed above with regard to Kong et al., Kong et al. actually teaches away from the claimed semiconductor device. Thus the combined teachings of Kong et al. and Nagai et al. would not suggest to one skilled in the art the claimed nitride-based semiconductor device. The teachings of the additionally cited references Matsumura et al., Shakuda, Kiyodu et al. and Hatano et al., considered as a whole, do not cure the deficiencies of Kong et al. and Nagai et al. Accordingly, the rejections under 35 U.S.C. §103(a) should be withdrawn.

### **CONCLUSION**

In view of the foregoing amendment and remarks, request is made for timely issuance of a notice of allowance.

Should the Examiner feel that a telephone interview would be helpful to facilitate favorable prosecution of the above-identified application, the Examiner is invited to contact the undersigned at the telephone number provided below.

Should a petition for an extension of time be necessary for the timely reply to the outstanding Office Action (or if such a petition has been made and an additional extension is necessary), petition is hereby made and the Commissioner is authorized to charge any fees (including additional claim fees) to Deposit Account No. 18-0988.

Respectfully submitted,

RENNER, OTTO, BOISSELLE & SKLAR, LLP

/Heidi A. Boehlefeld/

Heidi A. Boehlefeld

Reg. No. 34,296

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The Keith Building  
1621 Euclid Avenue  
Nineteenth Floor  
Cleveland, Ohio 44115  
(216) 621-1113